

**DETERMINING SUITABLE PROGRAM FOR SPM HOLDER
USING NEURAL NETWORK APPROACH**

A Project submitted to the Graduate School in partial fulfillment
of the requirements for the degree
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ABSTRACT (BAHASA MELAYU)

Kajian ini merangkumi pembangunan model ramalan rangkaian neural untuk keperluan pendidikan khususnya dalam mengenalpasti program yang sesuai untuk pelajar lepasan SPM. Model ramalan yang dijana digunakan untuk penilaian sendiri berasaskan web supaya mudah dicapai oleh ramai pengguna. Asas senibina untuk pembangunan model adalah dengan mensimulasikan *Perceptron Berlapis* menggunakan algoritma rambatan balik. Penilaian terhadap 302 set data menunjukkan senibina modul yang dibangunkan adalah sesuai untuk vector input yang mempunyai dimensi yang besar. Data kajian terdiri daripada pelajar dari 4 program pengajian di 4 buah Pusat Matrikulasi Kementerian Pendidikan Malaysia, 3 Kampus UITM dan Kolej Shahputra. Sampel data yang dikumpul dilatih dan diuji menggunakan modul ramalan yang dibangunkan. Dapatan kajian menunjukkan bahawa model ramalan yang terbaik mengandungi tiga puluh lima nod pada lapisan input, tiga nod pada lapisan tersembunyi dan satu nod pada lapisan output. Prestasi yang dihasilkan oleh modul ramalan didapati memberikan 83.33% ketepatan. Kaedah ini boleh menyediakan satu perspektif baru terhadap maklumat pendidikan. Oleh itu, rangkaian neural mempunyai potensi yang baik dalam membantu pembentukan polisi dunia pendidikan masa kini.

Katakunci : rangkaian neural, Perceptron Berlapis, algoritma rambatan balik, lepasan SPM.

ABSTRACT (ENGLISH)

This study involves the development of a neural network (NN) prediction model proposed for the educational spending specifically in determining suitable program for SPM Holder . This module used for self-assessment prediction in web-based environment in order to get more user participation. The basic architecture are multilayer feedforward networks, trained using the Backpropagation algorithm. The evaluation using 302 data sets showed that the developed architecture is very useful for high dimensional input vectors. The sample data has been collected from 4 study programs in four Ministry of Education Matriculation Centre, 3 from UITM and Shahputra College. The data was then trained using the proposed model. The findings show that the most suitable predictive model comprises of 35 nodes in input-layer; three nodes in hidden-layer and one node in output-layer. The generalization performance of the selected model is 83.33%. This methodology should be able to provide us with some new insights into the type of patterns that exist in educational data. Therefore, NN has a great potential in supporting the policy development for the current education.

Keywords : neural network (NN), multilayer feedforward network, backpropagation algorithm, SPM holder.

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CHAPTER 1

INTRODUCTION

1.1 Overview

Forecasting is predicting a future event based on historical data. The technique known, as an Artificial Neural Network is a computer driven statistical model that mimics some of the functions of the neurons in the human brains specifically, the neurons abilities to recognize and learn patterns. This study provides the predictive ability of the Artificial Neural Networks (ANNs) that can be used as an alternative predictor for determining the suitable program for SPM holders in our Educational Institution, aims for delivering high quality of student and performs better quality of education.

They are many challenges facing educational institution today. The increasing number of both students and courses offered are the main factors that the institution must deal with. Recently, there are a lot of studies opportunities offered in our educational institutions for the needs towards tertiary education by offering degree, diploma, science and account matriculation and certificate level

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